

What is claimed is:

1. In a capacitive type sensor having first and second electrodes, a gas sensitive film provided between
5 the electrodes, and an insulating substrate that supports the electrodes and the gas sensitive film thereon, the improvement comprising:

said first and second electrodes being fixed on a surface of the insulating substrate to face each other, and
10 each having a linear thermal expansion coefficient that is less than that of the gas sensitive film and substantially the same as that of the insulating substrate.

2. The capacitive type sensor according to claim 1, wherein said gas sensitive film is a water vapor sensitive
15 film, and said capacitive type sensor has its capacitance varying depending on an amount of water vapor absorbed in said water vapor sensitive film.

3. The capacitive type sensor according to claim 2, wherein said water vapor sensitive film has a linear
20 thermal expansion coefficient equal to or greater than 2×10^{-5} per degree centigrade, and

said insulating substrate and said first and second electrodes each have a linear thermal expansion coefficient equal to or less than 1×10^{-5} per degree centigrade.

25 4. The capacitive type sensor according to claim 2, wherein said insulating substrate is constituted by a material that is selected from a group consisting of glass, quartz, silicon, ceramics, and sapphire,

said water vapor sensitive film is constituted by a
30 material that is selected from a group consisting of a crosslinked polymer material, and an organic polymer material, and

said first and second electrodes are each constituted

by a material that is selected from a group consisting of Si, SiC, GaAs, and polysilicon.

5 5. The capacitive type sensor according to claim 2, wherein said first and second electrodes each have a thickness falling within a range from 1 μm to 11 μm inclusive.

10 6. The capacitive type sensor according to claim 2, wherein a face-to-face distance between said first and second electrodes falls within a range from 0.5 μm to 5 μm inclusive.

7. The capacitive type sensor according to claim 2, further comprising:

15 an upper water vapor sensitive film formed on said first and second electrodes and said water vapor sensitive film,

wherein a shielding film is formed in said upper water vapor sensitive film.

20 8. The capacitive type sensor according to claim 2, wherein said first and second electrodes are joined to the surface of said insulating substrate.

9. The capacitive type sensor according to claim 8, wherein said first and second electrodes are formed by subjecting an electrically conductive substrate, joined to said insulating substrate, to polishing or etching.

25 10. The capacitive type sensor according to claim 2, wherein said first electrode includes a first electrode body and a plurality of first comb-electrode portions extending from said first electrode body,

30 said second electrode includes a second electrode body and a plurality of second comb-electrode portions extending from said second electrode body,

said first and second comb-electrode portions are alternately disposed with a predetermined face-to-face

distance, and

said water vapor sensitive film is disposed between and in contact with said first and second comb-electrode portions, and cooperates with said first and second com-
5 electrode portions to form a plurality of vertically arranged capacitors.

11. The capacitive type sensor according to claim 10, further comprising an upper water vapor sensitive film formed on said first and second electrodes and said water
10 vapor sensitive film,

wherein a shielding film is formed in said upper water vapor sensitive sensor at a location above and near said first and second comb-electrode portions.

12. The capacitive type sensor according to claim 2,
15 wherein said first electrode includes a first electrode body, a first straight electrode portion extending from said first electrode body, and a plurality of first annular electrode portions extending from said first straight electrode portion,

20 said second electrode includes a second electrode body, a second straight electrode portion extending from said second electrode body, and a plurality of second annular portions extending from said second straight electrode portion,

25 said first and second annular electrode portions are alternately disposed with a predetermined face-to-face distance and coaxially with one another, and

said water vapor sensitive film is disposed between and in contact with said first and second annular electrode
30 portions, and cooperates with said first and second annular electrode portions to form a plurality of vertically arranged capacitors.

13. The capacitive type sensor according to claim 2,

wherein said first electrode includes a first electrode body, at least one first straight electrode portion extending from said first electrode body, and a plurality of first toothed electrode portions extending
5 perpendicularly from said first straight electrode portion,

said second electrode includes a second electrode body, a plurality of second straight electrode portions extending from said second electrode body, and a plurality of second toothed electrode portions extending
10 perpendicularly from each of said second straight electrode portions,

adjacent ones of said first straight electrode portion, said first toothed electrode portions, said second straight electrode portions, and second toothed electrode
15 portions are disposed to face one another with a predetermined face-to-face distance, and

said water vapor sensitive film is disposed between and in contact with adjacent ones of said first straight electrode portion, said first toothed electrode portions,
20 said second straight electrode portions, and second toothed electrode portions, and cooperates with the adjacent electrode portions to form a plurality of vertically arranged capacitors.

14. The capacitive type sensor according to claim 2,
25 wherein said first electrode includes a first electrode body, and a lower electrode portion extending from said first electrode body and provided with a plurality of first toothed electrode portions disposed at equal intervals,

said first toothed electrode portions extending
30 upward perpendicularly from an upper face of said lower electrode portion, and cooperates with said lower electrode portion to form lower comb electrodes,

said second electrode includes a second electrode

body and an upper electrode portion extending from said second electrode body,

5 said upper electrode portion has an upper wall provided with a plurality of second toothed electrode portions disposed at equal intervals, and side walls fixed at bottom faces thereof to said insulating substrate,

10 said second toothed electrode portions extend downward perpendicular from the upper wall of said upper electrode portion, and cooperate with said upper electrode portions to form upper comb electrodes,

 said upper comb electrodes and said lower comb electrodes are disposed to face one another with a predetermined face-to-face distance, and

15 said water vapor sensitive film is disposed between and in contact with said upper and lower comb electrodes, and cooperates with said upper and lower comb electrodes to form a plurality of vertically arranged capacitors.